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1 Efficient distributed backup with delta compression



Randal C. Burns, Darrell D. E. Long

November 1997 **Proceedings of the fifth workshop on I/O in parallel and distributed systems**

Publisher: ACM Press

Full text available: pdf(1.37 MB) Additional Information: full citation, references, citings, index terms

2 Use of performance analysis statistics in computer system simulation



P. R. Katonak

January 1971 **Proceedings of the 5th conference on Winter simulation**

Publisher: ACM Press

Full text available: pdf(794.16 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A general purpose job stream simulation model has been developed for routine use in evaluating hardware configurations and performance tuning a large scale multiprocessor computing system operating in a multiprogramming mode. The model is designed to simulate a variable workload of jobs statistically generated from attributes of the actual workload for any time period. Major functional modules include job-step generation, job classing, scheduling and step initiation, core allocation, cpu op ...

3 General storage protection techniques: Ensuring data integrity in storage: techniques and applications



Gopalan Sivathanu, Charles P. Wright, Erez Zadok

November 2005 **Proceedings of the 2005 ACM workshop on Storage security and survivability StorageSS '05**

Publisher: ACM Press

Full text available: pdf(217.83 KB) Additional Information: full citation, abstract, references, index terms

Data integrity is a fundamental aspect of storage security and reliability. With the advent of network storage and new technology trends that result in new failure modes for storage, interesting challenges arise in ensuring data integrity. In this paper, we discuss the causes of integrity violations in storage and present a survey of integrity assurance techniques that exist today. We describe several interesting applications of storage integrity checking, apart from security, and discuss the im ...

Keywords: file systems, intrusion detection, storage integrity

4 A survey of rollback-recovery protocols in message-passing systems



E. N. (Mootaz) Elnozahy, Lorenzo Alvisi, Yi-Min Wang, David B. Johnson
September 2002 **ACM Computing Surveys (CSUR)**, Volume 34 Issue 3

Publisher: ACM Press

Full text available: pdf(549.68 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This survey covers rollback-recovery techniques that do not require special language constructs. In the first part of the survey we classify rollback-recovery protocols into *checkpoint-based* and *log-based*. *Checkpoint-based* protocols rely solely on checkpointing for system state restoration. Checkpointing can be coordinated, uncoordinated, or communication-induced. *Log-based* protocols combine checkpointing with logging of nondeterministic events, encoded in tuples call ...

Keywords: message logging, rollback-recovery

5 Decentralized storage systems: Ivy: a read/write peer-to-peer file system



Athicha Muthitacharoen, Robert Morris, Thomer M. Gil, Benjie Chen
December 2002 **ACM SIGOPS Operating Systems Review**, Volume 36 Issue SI

Publisher: ACM Press

Full text available: pdf(1.65 MB) Additional Information: [full citation](#), [abstract](#), [references](#)

Ivy is a multi-user read/write peer-to-peer file system. Ivy has no centralized or dedicated components, and it provides useful integrity properties without requiring users to fully trust either the underlying peer-to-peer storage system or the other users of the file system. An Ivy file system consists solely of a set of logs, one log per participant. Ivy stores its logs in the DHash distributed hash table. Each participant finds data by consulting all logs, but performs modifications by appendi ...

6 The EO-1 Autonomous Science Agent



Steve Chien, Rob Sherwood, Daniel Tran, Benjamin Cichy, Gregg Rabideau, Rebecca Castano, Ashley Davies, Rachel Lee, Dan Mandl, Stuart Frye, Bruce Trout, Jerry Hengemihle, Jeff D'Agostino, Seth Shulman, Stephen Ungar, Thomas Brakke, Darrell Boyer, Jim Van Gaasbeck, Ronald Greeley, Thomas Doggett, Victor Baker, James Dohm, Felipe Ip
July 2004 **Proceedings of the Third International Joint Conference on Autonomous Agents and Multiagent Systems - Volume 1 AAMAS '04**

Publisher: IEEE Computer Society

Full text available: pdf(766.20 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

An Autonomous Science Agent is currently flying onboard the Earth Observing One Spacecraft. This software enables the spacecraft to autonomously detect and respond to science events occurring on the Earth. The package includes software systems that perform science data analysis, deliberative planning, and run-time robust execution. Because of the deployment to a remote spacecraft, this Autonomous Science Agent has stringent constraints of autonomy, reliability, and limited computing resources. W ...

7 Industrial track: aerospace applications: Lessons learned from autonomous sciencecraft experiment



Steve Chien, Rob Sherwood, Daniel Tran, Benjamin Cichy, Gregg Rabideau, Rebecca Castaño, Ashley Davies, Dan Mandl, Stuart Frye, Bruce Trout, Jeff D'Agostino, Seth Shulman, Darrell Boyer, Sandra Hayden, Adam Sweet, Scott Christa
July 2005 **Proceedings of the fourth international joint conference on Autonomous agents and multiagent systems AAMAS '05**

Publisher: ACM Press

Full text available: pdf(705.19 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

An Autonomous Science Agent has been flying onboard the Earth Observing One Spacecraft since 2003. This software enables the spacecraft to autonomously detect and responds to science events occurring on the Earth such as volcanoes, flooding, and snow melt. The package includes AI-based software systems that perform science data analysis, deliberative planning, and run-time robust execution. This software is in routine

use to fly the EO-1 mission. In this paper we briefly review the agent archite ...

8 Algorithms and performance evaluation of the Xphone multimedia communication system




Alexandros Eleftheriadis, Sassan Pejhan, Dimitris Anastassiou

September 1993 **Proceedings of the first ACM international conference on Multimedia**

Publisher: ACM Press

Full text available:  [pdf\(208.33 KB\)](#)

 [ps\(362.57 KB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: application development systems, media synchronization, multimedia communication systems, source rate control

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 Terms used **detect access signature**

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1 [Workload analysis: Accurate, scalable in-network identification of p2p traffic using application signatures](#)



Subhabrata Sen, Oliver Spatscheck, Dongmei Wang

 May 2004 **Proceedings of the 13th international conference on World Wide Web**

Publisher: ACM Press

Full text available: pdf(205.76 KB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)

The ability to accurately identify the network traffic associated with different P2P applications is important to a broad range of network operations including application-specific traffic engineering, capacity planning, provisioning, service differentiation, etc. However, traditional traffic to higher-level application mapping techniques such as default server TCP or UDP network-port based disambiguation is highly inaccurate for some P2P applications. In this paper, we provide an efficient approach ...

Keywords: application-level signatures, online application classification, p2p, traffic analysis

2 [Automatic high-quality reengineering of database programs by abstraction, transformation and reimplementation](#)



Yossi Cohen, Yishai A. Feldman

 July 2003 **ACM Transactions on Software Engineering and Methodology (TOSEM)**, Volume 12 Issue 3

Publisher: ACM Press

Full text available: pdf(245.97 KB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Old-generation database models, such as the indexed-sequential, hierarchical, or network models, provide record-level access to their data, with all application logic residing in the hosting program. In contrast, relational databases can perform complex operations, such as filter, aggregation, and join, on multiple records without an external specification of the record-access logic. Programs written for relational databases attempt to move as much of the application logic as possible into the database ...

Keywords: Database program reengineering, query graphs, temporal abstraction, the plan calculus

3 [Tradeoffs between false sharing and aggregation in software distributed shared memory](#)




Cristiana Amza, Alan Cox, Karthick Rajamani, Willy Zwaenepoel

 June 1997 **ACM SIGPLAN Notices , Proceedings of the sixth ACM SIGPLAN symposium**

on Principles and practice of parallel programming PPOPP '97, Volume 32
Issue 7

Publisher: ACM Press

Full text available:  pdf(1.09 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Software Distributed Shared Memory (DSM) systems based on virtual memory techniques traditionally use the hardware page as the consistency unit. The large size of the hardware page is considered to be a performance bottleneck because of the implied false sharing overheads. Instead, we show that in the presence of a relaxed consistency model and a multiple writer protocol, a large consistency unit is generally not detrimental to performance. We study the tradeoffs between false sharing and aggreg ...

4 Ownership types for safe programming: preventing data races and deadlocks



Chandrasekhar Boyapati, Robert Lee, Martin Rinard

November 2002 **ACM SIGPLAN Notices , Proceedings of the 17th ACM SIGPLAN conference on Object-oriented programming, systems, languages, and applications OOPSLA '02**, Volume 37 Issue 11

Publisher: ACM Press

Full text available:  pdf(459.57 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents a new static type system for multithreaded programs; well-typed programs in our system are guaranteed to be free of data races and deadlocks. Our type system allows programmers to partition the locks into a fixed number of equivalence classes and specify a partial order among the equivalence classes. The type checker then statically verifies that whenever a thread holds more than one lock, the thread acquires the locks in the descending order. Our system also allows programmer ...

Keywords: data races, deadlocks, encapsulation, ownership types

5 Dynamic program parallelization



Lorenz Huelsbergen, James R. Larus

January 1992 **ACM SIGPLAN Lisp Pointers , Proceedings of the 1992 ACM conference on LISP and functional programming LFP '92**, Volume V Issue 1

Publisher: ACM Press

Full text available:  pdf(1.31 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Static program analysis limits the performance improvements possible from compile-time parallelization. Dynamic program parallelization shifts a portion of the analysis from compile-time to run-time, thereby enabling optimizations whose static detection is overly expensive or impossible. Lambda tagging and heap resolution are two new techniques for finding loop and non-loop parallelism in imperative, sequential languages with first-class ...

6 Summary of ACM/ONR workshop on parallel and distributed debugging



October 1993 **ACM SIGOPS Operating Systems Review**, Volume 27 Issue 4

Publisher: ACM Press

Full text available:  pdf(1.34 MB)

Additional Information: [full citation](#), [index terms](#)

7 RaceTrack: efficient detection of data race conditions via adaptive tracking



Yuan Yu, Tom Rodeheffer, Wei Chen

October 2005 **ACM SIGOPS Operating Systems Review , Proceedings of the twentieth ACM symposium on Operating systems principles SOSP '05**, Volume 39 Issue 5

Publisher: ACM Press

Full text available:  pdf(321.34 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Bugs due to data races in multithreaded programs often exhibit non-deterministic symptoms and are notoriously difficult to find. This paper describes RaceTrack, a dynamic race detection tool that tracks the actions of a program and reports a warning whenever a suspicious pattern of activity has been observed. RaceTrack uses a novel hybrid detection algorithm and employs an adaptive approach that automatically directs more effort to areas that are more suspicious, thus providing more accurate war ...

Keywords: race detection, virtual machine instrumentation

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 Terms used **access log storage device**

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1 [Distributed logging for transaction processing](#)



Dean S. Daniels, Alfred Z. Spector, Dean S. Thompson

 December 1987 **ACM SIGMOD Record , Proceedings of the 1987 ACM SIGMOD international conference on Management of data SIGMOD '87**, Volume 16 Issue 3

Publisher: ACM Press

 Full text available: [pdf\(1.51 MB\)](#)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Increased interest in using workstations and small processors for distributed transaction processing raises the question of how to implement the logs needed for transaction recovery. Although logs can be implemented with data written to duplexed disks on each processing node, this paper argues there are advantages if log data is written to multiple log server nodes. A simple analysis of expected logging loads leads to the conclusion that a high performance, microprocessor b ...

2 [Intelligent I/O rule-based input/output processing for operating systems](#)



Garbriel Broner, Patrick Powell

 May 1991 **ACM SIGOPS Operating Systems Review**, Volume 25 Issue 3

Publisher: ACM Press

 Full text available: [pdf\(834.30 KB\)](#)

 Additional Information: [full citation](#), [abstract](#), [index terms](#)

IntelligentI/O is a rule based general model for performing "intelligent" processing of Input/Output operations in an Operating System. In a new interface layer between the applications and the kernel I/O functions, rules determine actions to be performed at I/O time which in turn invoke programs in user space. IntelligentI/O permits complete implementation in user space applications that would normally require ad-hoc kernel modifications such as a Network File System. It also serves to implemen ...

3 [Visualizing the evolution of Web ecologies](#)



Ed H. Chi, James Pitkow, Jock Mackinlay, Peter Pirolli, Rich Gossweiler, Stuart K. Card

 January 1998 **Proceedings of the SIGCHI conference on Human factors in computing systems**

Publisher: ACM Press/Addison-Wesley Publishing Co.

 Full text available: [pdf\(995.44 KB\)](#)

 Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: World Wide Web, documents, hypertext, information ecologies, log file analysis, temporal analysis, visualizaition

**Information protection methods: Display-only file server: a solution against information theft due to insider attack**

Yang Yu, Tzi-cker Chiueh

October 2004 **Proceedings of the 4th ACM workshop on Digital rights management****Publisher:** ACM PressFull text available: pdf(311.80 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Insider attack is one of the most serious cybersecurity threats to corporate America. Among all insider threats, information theft is considered the most damaging in terms of potential financial loss. Moreover, it is also especially difficult to detect and prevent, because in many cases the attacker has the proper authority to access the stolen information. According to the 2003 CSI/FBI Computer Crime and Security Survey, theft of proprietary information was the single largest category of los ...

Keywords: access, digital rights management, information theft, insider attack

5

Information and control in gray-box systems

Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau

October 2001 **ACM SIGOPS Operating Systems Review , Proceedings of the eighteenth ACM symposium on Operating systems principles SOSP '01**, Volume 35 Issue 5**Publisher:** ACM PressFull text available: pdf(1.59 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)

In modern systems, developers are often unable to modify the underlying operating system. To build services in such an environment, we advocate the use of *gray-box* techniques. When treating the operating system as a gray-box, one recognizes that not changing the OS restricts, but does not completely obviate, both the *information* one can acquire about the internal state of the OS and the *control* one can impose on the OS. In this paper, we develop and investigate three gray-bo ...



6

Anatomy of a native XML base management system

T. Fiebig, S. Helmer, C.-C. Kanne, G. Moerkotte, J. Neumann, R. Schiele, T. Westmann

December 2002 **The VLDB Journal – The International Journal on Very Large Data Bases**, Volume 11 Issue 4**Publisher:** Springer-Verlag New York, Inc.Full text available: pdf(300.97 KB) Additional Information: [full citation](#), [abstract](#), [citings](#), [index terms](#)

Several alternatives to manage large XML document collections exist, ranging from file systems over relational or other database systems to specifically tailored XML base management systems. In this paper we give a tour of Natix, a database management system designed from scratch for storing and processing XML data. Contrary to the common belief that management of XML data is just another application for traditional databases like relational systems, we illustrate how almost every component in a ...

Keywords: Database, XML

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